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Making Raisins

U.S. DEPARTMENT OF AGRICULTURE

Science Study Aid No. 1

BACKGROUND INFORMATION

Raisins are grapes that have been dehydrated. The word raisin is derived from the French, *raisin sec*, meaning dried grape.

Two varieties of grapes, Thompson seedless and muscat of Alexandria, are used to make raisins. Muscat grapes have seeds, which are sometimes removed when the grapes are made into raisins. Almost all of the raisins produced in the United States are made from Thompson seedless grapes.

The four kinds of raisins produced commercially are—

- Natural raisins, which are dried in the sun and are not cured. They are dark brown.
- Golden-bleached raisins, which are made from grapes cured in a 0.5-percent lye solution.

The lye removes the wax and cracks the skins to speed drying. Then the grapes are bleached by exposure to fumes of burning sulfur, and are dried with artificial heat. They are golden yellow and are used chiefly in baked goods.

- Sulfur-bleached raisins, which are also treated with the lye solution. They are dried in the sun. The finished product is light beige to orange.

- Lexia raisins, which are dipped in a lye solution that has a thin film of olive oil on it. They are dried in the sun. They are medium to dark brown, tender, and mild flavored.

In 1969 U.S. production of raisins was about 252,000 tons, nearly all from California. Other leading raisin-producing countries are Australia, Turkey, Greece, Iran, South Africa, Spain, Cyprus, and Argentina.

Making Raisins was developed by Margaret Jackson, an elementary science specialist in the District of Columbia school system. She prepared it while working with scientists at the Agricultural Research Center at Beltsville, Md.

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OBJECTIVE

To make raisins in the classroom.

VOCABULARY

Bleach—remove the color by means of chemicals or by exposure to the sun.

Cure—preserve by means of chemicals.

Dehydrate—remove water from; dry.

Pliable—easily bent; flexible.

Ton—a unit of weight of 2,000 pounds.

RELATED ACTIVITIES

The activities in this Science Study Aid can be related to several subject areas, as follows:

Arithmetic—Compare the size and weight of the grapes before and after dehydration (see Activity III).

Geography—Locate on the map the countries in which raisins are produced. Compare the climates of these countries. Compare the climates of raisin-producing countries with those of countries that do not produce raisins.

Home economics—Use raisins to prepare food.

FILM

“Raisins You Buy.”—This 4½-minute film shows how California raisins are inspected, cleaned, processed, and packaged to insure that they are sound and wholesome. The U.S. Department of Agriculture’s process food inspectors examine raisins when they are delivered to packing plants, to determine their maturity and wholesomeness. They examine them again after processing to insure cleanliness and good quality. The film also shows several ways raisins can be used. For information on loan or purchase of this film, write to: Motion

Picture Service, Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250. Please include your ZIP code number in your return address.

ACTIVITY I: Making Raisins by Drying Grapes in the Sun

Note: This activity requires low humidity and fair weather.

Materials: Fresh, ripe, firm seedless grapes (enough for each child to have a few).

Scales.

Large pan or bowl of water.

Plastic-coated trays or paper plates.

Pieces of clean cheesecloth, mosquito netting, or wire screen, large enough to cover the trays.

Glass container with tight-fitting lid.

Procedure:

1. Weigh the grapes and record the data. Handle the grapes carefully, as they bruise easily.
2. Place the grapes in the container of water and wash them thoroughly.
3. Lift the grapes from the water and blot them with a towel.
4. Remove the grapes from the stem and spread one layer of grapes evenly on the tray.
5. Cover the tray with the cloth or screen to keep insects and dust from getting on the grapes.
6. Fasten the cloth so it will not blow off.
7. Place the tray of grapes in direct sunlight to dry, away from dirt and dust and where air can circulate freely over and under the tray. You may need to put the tray on blocks.

8. After 4 days test the grapes for dryness by squeezing them in your hand. If there is no moisture left on your hand and the grapes spring apart when the hand is opened, the grapes are dry enough. They should then be pliable and leathery.
9. If the grapes are not dry test them again the next day.
10. When the grapes are dry remove them from the tray and weigh them. Record the data.
11. Store the dried grapes (raisins) in the glass container.

**ACTIVITY II: Making Raisins by Drying
Grapes in an Oven, in an
Incubator, or on a Radiator**

Materials: Fresh, ripe, firm seedless grapes
(enough for each child to have a few).

Scales.

Large pan or bowl of cool water.

Large container of boiling water.

Tray (suitable for baking).

Oven, incubator, or radiator.

Glass container with tight-fitting lid.

- Procedure:*
1. Weigh the grapes and record the data. Handle the grapes carefully, as they bruise easily.
 2. If you are using an oven or an incubator, preheat it to about 160° F.
 3. Place the grapes in the container of cool water and wash them thoroughly.
 4. Lift the grapes from the water.
 5. Dip the grapes in boiling water to crack the skins.

6. Remove the grapes from the stem and spread one layer of grapes evenly on the tray.

7. Place the tray containing the grapes in the oven, in the incubator, or on the radiator.

8. Turn the grapes at least twice while they are drying.

9. Let the grapes remain in the oven, in the incubator, or on the radiator until they are pliable. This requires 2 to 6 hours, depending on the temperature and humidity. The higher the temperature and the lower the humidity, the less time will be required.

10. When the grapes are dry, remove them from the oven, incubator, or radiator, and weigh them. Record the data.

11. Store the dried grapes (raisins) in the glass container.

**ACTIVITY III: Observation and Comparison
of Grapes and Raisins**

Materials: Raisins made in the classroom.

Data on the weight of the raisins and the grapes from which they were made.

A bunch of the same type of grapes as those from which the raisins were made.

- Procedure:*
1. Compare the weight of the raisins with the weight of the grapes from which they were made.
 2. Compare the physical characteristics of the raisins with the physical characteristics of grapes.
 3. Compare the taste of the raisins with the taste of the grapes.



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